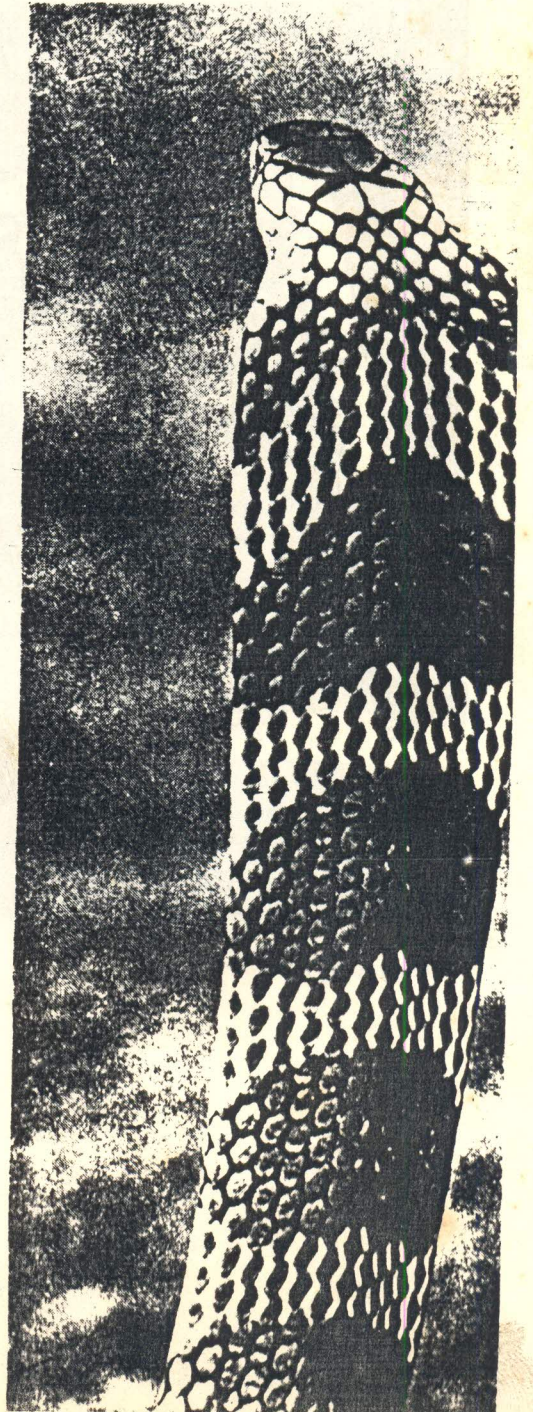


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# HAMADRYAD

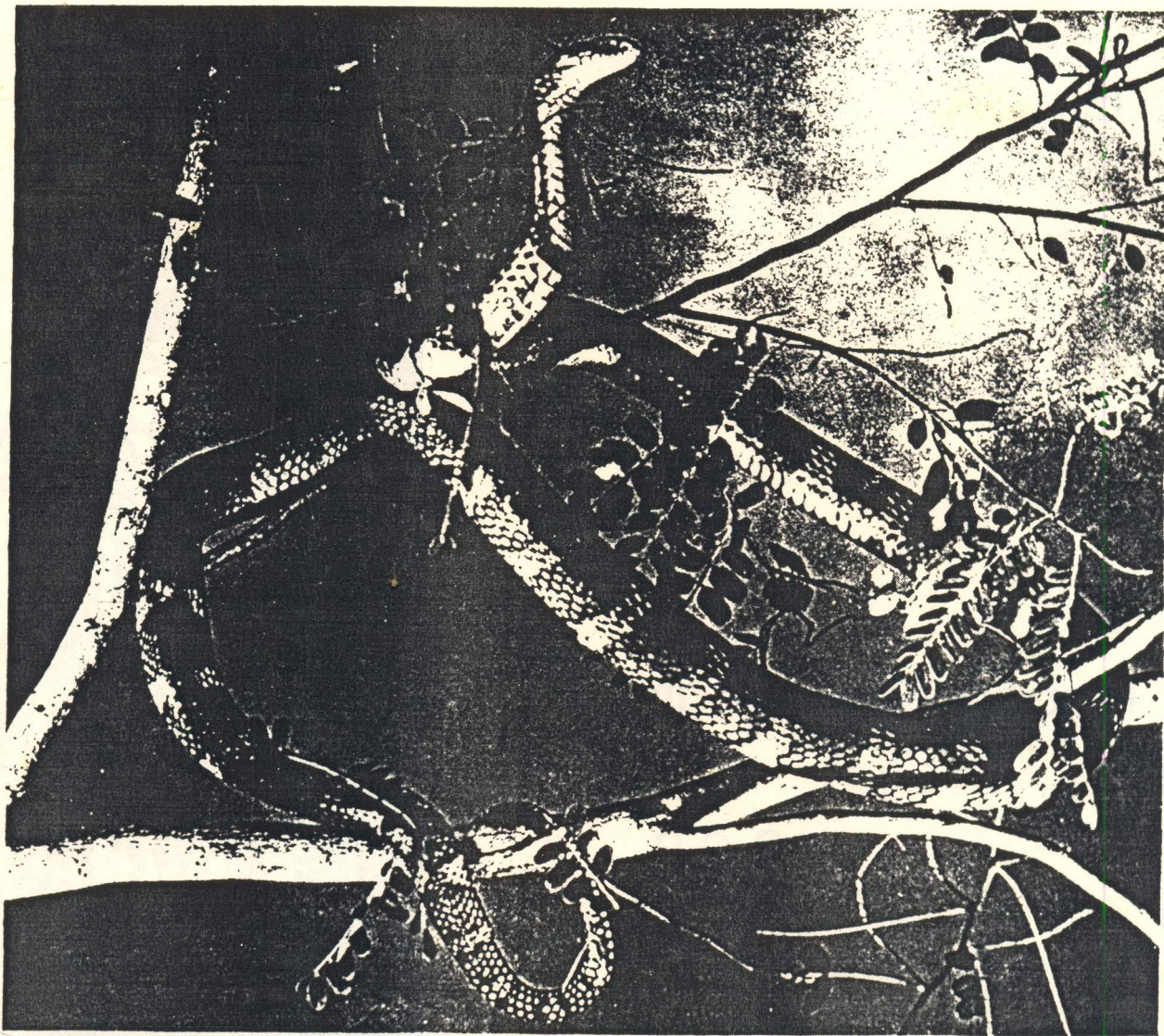
Happy New Year

1980





HAMMADRYAD



*Ophiophagus hamah*

*Andomans*



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News from the MADRAS SNAKE PARK and  
MADRAS CROCODILE BANK

The Snake Park is being given elaborate facilities at the tourist trade fair this year, which will function from 22 December until the end of February. Our annual participation in the trade fair gives thousands of rural tourists an opportunity to observe and learn about snakes.

A new python house has been made for our rock pythons and the center pit has been re-constructed to accommodate 700 visitors at a time. It is equipped with fans, flood lights, and a PA system. A ten minute lecture and demonstration is given every hour.

Work has begun on the museum, to be called Snakes and Ourselves which will have photographs, artifacts and other items of relevance. Mr. M. Krishnan, Trustee and the finest wildlife photographer in India, is providing large blow-ups for display.

Robert Larson from Utah, USA, arrived in Madras in November to begin his assignment with the snake park. He will be working on improving and extending the exhibits.

Satish Bhaskar attended ~~one~~ sea turtle conferences in the United States in November-December. He is now no longer associated with the Snake Park, having resigned; but will hopefully keep up his interest in sea turtles.

The Crocodile Bank has received two grants. That from the Tamil Nadu Tourist Development Corporation, for Rs.25,000 is the second part of a donation for the construction of enclosures and tourist facilities. The other, of DM 10,000 from the International Reptile Leather Association is for research on and breeding facilities for the gharial (Gavialis gangeticus), of which the Crocodile Bank now has 6.

Regarding the male gharial from the Frankfurt Zoological Gardens, he was sent to the Government of India/FAO Crocodile Project in Hyderabad.

The Crocodile Bank has made its first sale of mugger for release. 10 three year olds were sent to the Madhya Pradesh Forest Department, for release in Shivpuri National Park.

A calendar of the Madras Snake Park Trust has been brought out for 1980. Our Trustee M. Krishnan has helped us with the layout and supply of fine snake pictures. The calendar is put up for sale at Rs.7-50/- each. Colourful Car and Scooter stickers have also been introduced for sale at Rs.2/- and Re.1/- each.



## SILENT VALLEY

The Silent Valley struggle continues. Though there is a good chance that the Kerala Government might after all give a second thought to continue the work at the project, a lurking fear persists that the battle may be lost. Our Prime Minister ~~ent~~. Indira Gandhi who is known for her strong views on protection of nature seems to view the whole matter sympathetically and advise the Kerala government to reconsider. Let's hope!

## MUGGER BREEDING AT MADRAS CROCODILE BANK- 1979

The *Crocodylus palustris* breeding season at Madras Crocodile Bank in 1979 was characterized by the fact that 6 of the 8 females in the breeding group laid two separate clutches of eggs. Though little is known about the nesting habits of wild mugger it was assumed that like most crocodilians it lays a single clutch of eggs per year. The pair of mugger at the Snake Park produced a double clutch in 1978 and tribals at Amaravathi Reservoir reported to us that they have observed two nesting 'seasons' in at least some individual mugger. There is some evidence that other crocodilians sometimes nest more than once a year (for example, two distinct layers of alligator eggs have been found in one nest). However there are apparently no references on confirmed cases of double nesting.

The following table gives a breakdown of this year's breeding results. As far as we know the dominant male 'Beta' (about 20 years old, 3.25 m long) serviced all the females. Most of the females were reared from the egg since 1971 (8 year olds); 'Nova' however is about the same age as Beta. The females are all 2.2-2.5 m in length. This year egg and hatchling measurements were not taken but the difference in sizes in various clutches were reportedly not significant nor consistently smaller in the second nests. (Table on Page '3' )

## LETTER FROM THE DIRECTOR

Tom Whitaker likes to believe he is missed at the snake park, and sends this message from Papua New Guinea where he is temporarily based, with the crocodile project.

Coming in low over the sea to Jackson's airport in Port Moresby we were amazed to see open grassland, savannah with eucalypts trees dotting the countryside. The dense tropical forests of Papua New Guinea are further west and north, in the hills.

We are living in a house on stilts, the typical construction of the country, at Moitaka Crocodile Farm on the outskirts of Port Moresby. Every evening the sky is filled with screeching Rainbow Lorikeets and in the early morning we wake to the sounds of three raucous birds, the Helmeted Friarbird, the Butcherbird and the Bluewinged Kokaburra, the last of which is the local version of our Storkbilled kingfisher. Walking around the garden we find several species of lively, ~~Bentons~~ ~~lizards~~ ~~lizard~~ (with a pointed

Madras Crocodile Bank Mugger Nesting and Hatching Data - 1972

Sl. No.	Name of female	Nest No.	No. of eggs	Date of laying	Date of hatching	No. days incubation	No. of hatchlings	% success	No. of undeveloped eggs	Dead hatchlings	No. of days between laying nests A and B
1.	Kerupputan	A	16	14.2.79	2.5.79	47	6	37.5	9	1	39
		B	12	25.3.79	5.6.79	72	1	0.8	11	-	
2.	Chitre	A	31	18.2.79	28.4.79	69	25	80.6	5	1	43
		B	31	2.4.79	13.6.79	72	28	90.3	3	-	
3.	Stampy	A	26	19.2.79	3.5.79	73	25	69.4	11	1	45
		B	39	5.4.79	13.6.79	69	4	10.2	35	-	
4.	Vijaya	A	31	25.2.79	8.5.79	41	15	48.4	16	-	44
		B	29	10.4.79	24.6.79	65	7	24.1	21	1	
5.	Alpha	A	31	7.3.79	20.5.79	74	22	70.9	9	-	51
		B	29	27.4.79	5.7.79	69	25	86.2	4	-	
6.	Chidambaram	A	25	31.3.79	7.6.79	68	1	0.4	24	-	30
		B	20	30.4.79	19.7.79	80	4	20.0	15	1	
7.	Blackie(?)	A	18	18.4.79	30.6.79	73	1	0.5	17	-	
Totals		13	348				164	47.1	185	4	

A. Vaughan

R. Whitaker

Madras Crocodile Bank



head like our Vine Snake) and the Water Lizard which is as common here as Calotes is in India. The latter runs fast on its hind legs, like Citana, and is about the same size as Calotes versicolor is in Madras.

On ~~the~~ evening walks down our path we have found baby crocodiles, Brown Tree Snakes (which look almost identical to the Andaman Cat Snake), the Brown headed Snake and an occasional Carpet Python, the most common of the five pythons found in this area. There are no toads native to Papua New Guinea but the South American marine toad was introduced several decades ago and the garden is full of these giants.

A few days ago a large taipan, one of the most dangerous snakes in the world, slid across the road into one of the crocodile breeding pens and hid itself in the grass and leaf nest of a New Guinea freshwater crocodile. We have caught several taipans and kept them for a while to observe and photograph. They don't feed well however, so we release them after a week or so. Another local venomous snake, the Death Adder is a short fat elapid which looks so much like a viper that it is difficult to believe it is actually in the same family as the cobra, krait and taipan. This snake we have found in the riverine forest of Brown River, which is a half an hour drive from here.

At Brown River can be found the other four species of pythons of this area: the small Green Tree Python, D'Albertis' Python (beautifully iridescent), the Water Python (black, and growing to over 15 ft), and the Amethystine Python which is the largest species here, growing to over 20ft.

My work is partly involved with the Moitaka Crocodile Farm, a government demonstration farm, where we are doing research on crocodile breeding and rearing techniques. This is the nesting season (November-December) of both the New Guinea freshwater crocodile (C.novaeguineae) and the saltwater Crocodile (C.porosus). Both species construct large mound nests from leaves, grass, sticks and earth about 1 1/2m in diameter and nearly a meter high. There are 1500 crocodiles on the farm, about 40 of which are breeding size females. Two of the largest crocodiles in captivity are housed here - both saltwater crocs about 16ft long and weighing close to a ton each.

I have been helping three private chicken and pig farms start large commercial crocodile farms to eventually house 15,000 crocs in each. The idea behind this is to provide a market for the small crocodiles caught by village hunters so they do not have to kill these little crocs for the skins. There are about 200 village level crocodile "farms" where bush material pens hold 20-100 crocodiles which are reared for about three years to culling size. Crocodiles are the sole income of many people living way out in the wide open swamp country of Western Province and East and West Sepik. Traditionally these people have hunted crocodiles for meat and now they enter the nation's cash economy by selling the skins.



The main conservation move by the project is a ban on the sale of skins over 20" in belly width, corresponding to a breeding size, seven foot crocodile. By protecting the breeders from commercial exploitation it is hoped that the crocodile industry will go on and on. There is no industry in the foreseeable future to replace crocodile skins as an income earner in the remote areas, and ideally the perpetuation of the industry will save the swamps from eventual draining for agriculture, damming of rivers and other drastic environmental changes. 95% of the land in this country is owned by various tribes and so it is very much their decision as to what it should be used for and what developments should take place.

Part of my job has been to visit the village farms in remote areas and advise on better rearing techniques. We have also evolved a live crocodile buying scheme, and methods of packing the crocs by the hundreds on the only local available transport; canoes or the flat bottomed aluminium boats known as rivertrucks. When the crocodiles arrive at the government farms (there are five others around the country besides Moitaka) they are kept there for a few weeks. Then, a chartered light plane arrives to transport them in specially made partitioned boxes to the large commercial farms.

While on patrol "in the bush", we have seen some fascinating things. The people, who are ethnically divided into nearly 700 tribes use a variety of bows and arrows and make some of the most beautiful 'primitive' carvings in the world. We have been fortunate to witness village dances (sing-sings) with people decked out in cassowary and bird of paradise plumes, beating on monitor lizard skin drums, and singing songs of the not so distant head hunting and cannibal days. On the Strickland River we saw the nesting banks of the Fly River Turtle and we now have one of these endemic turtles, which has a pig-like nose and sea turtle like flipper.

Back in Port Moresby we are just waiting for the brown parched land to be drenched with the first rains of the north west monsoon. It is summer here below the equator and the hot mugginess reminds us of pre-monsoon days back home.

#### KING COBRA NOTES

The mere name King Cobra is enough to conjure up fantastic images and legends. Unfortunately it often affects the travel/hunting/adventure type writers and results in sensational fact twisting and exaggeration for the sake of a thrilling story. Even the late Jim Corbett could not resist a gutsy King Cobra chapter in one of his books.

Fairy tales about king cobras include ability to travel as fast as a horse, spitting venom, unprovoked aggressive attacks, revenging a killed mate and many other feats considered worthy of a super snake.



To bring this magnificent snake 'down' to the level of reality in no way diminishes its impressiveness. As is so often true in nature, the facts are just as startling and interesting as the fiction.

In India, king cobras find their home in the dense rain forests of the Western Ghats, the eastern Himalayan foot-hills, the Andamans, and even the forest and mangrove swamps of Bengal and Orissa. The male is considerably larger than the female and apparently finds her without difficulty some time around March, the breeding season. Once mating is accomplished the two snakes go their separate ways, possibly never to meet again. After about a month the female finds a suitable nesting site to lay her 15-25 eggs.

She chooses a bamboo grove and gets about the task, tedious for an animal without limbs, of gathering leaves together for her nest mound. Using loops of her body she scrapes the leaves from a circle some 3 m in diameter and piles them up at the center. After several days she has a compact pile nearly 2 ft high and 3 ft in diameter at the base. When the time is right she enters the bottom of the nest and deposits her eggs in a cup shaped hollow just above ground level.

By this time the south-west monsoon has generally begun and to shelter herself from the heavy rain drops the female cobra King Cobra lies coiled under a few layers of leaves at the top of the nest. As the weeks wear on she does not leave the nest to feed. If her skin-shedding time arrives she sheds it on the nest. The rains batter her nest down so she is now lying exposed to the elements. The eggs however remain quite untouched by the rain; just warm and moist enough to ensure safe development of the embryos. After about 65 days it is time for the eggs to hatch.

During her two month vigil the nest was approached three times: by a monitor lizard, a wild pig, and wood cutters with their dogs. In each case the starved and weak female roused herself, expanded her brightly banded hood and raised up her head and body a meter above her coil on the nest. In every case this startling sight was enough to dissuade the intruders from approaching any closer. If they had, the snake would have slid away into the jungle, quickly; but the display worked each time.

When the babies start hatching the slight movements they made indicates to the female that her job is over and without a backward glance she moves off to look for her first meal in over two months. Hatching king cobras slit the leathery shells with their special egg tooth and take their first breath of air. Within a few hours most of them are inquisitively looking out of the nest and probing the air with sensitive tongues. Gradually they scatter and climb into the safety of the bamboo. Some will soon be killed by birds and monitor lizards but a few will grow to over 15 ft in length, feeding on rat snakes and other snakes. Now and then a human will catch a glimpse of one of these great snakes and the legends and stories would go on and on.

Romulus Whitaker



## SNAKES IN PERADENIYA CAMPUS, SRI LANKA

The University park lies at an altitude of 480 meters and consists of about 1800 acres. On the east of the park is the Mantana mountain range from which several streams run down through the park grounds to the Mahaweli River on the west. To the north are the Peradeniya Botanical Gardens. Part of the campus was formerly a tea and rubber estate, and approximately 1100 acres are on the slopes of the Mantana mountain range. The present study was conducted on the inhabited part of the campus, around the official buildings.

199 snakes belonging to 16 species were collected during January 1969 to December 1975 (see table). These were all found during the day. Information such as time and place of capture, species sex and length was recorded. No snake bite deaths were reported during this period.

### Species and sex

The distribution of the 16 species of snakes captured are tabled. There were four species of venomous snakes. The cobra Naja naja naja was the commonest snake on the campus. Of those caught, 10.3% were polyocellate (irregular markings). (Of more than 200 cobras captured in Sri Lanka, only 10% were polyocellate).

The other common snake was the Trinket Snake (Elaphe helena). There were 15 females and 2 males. Collection data from other parts of the country confirmed the abundance of females to males.

The snakes not accounted for which could occur in the university park are the uropeltids and Agkistrodon. I have collected these in the vicinity of Peradeniya campus.

### Length

The lengths of 101 snakes were recorded. Of the 39 Najas, 14 were over 1000 mm in length. The longest cobra was a male (1700 mm). The largest snake in the present study was a female Ptyas mucosus maximus (1790 mm). (A rat snake caught in the Mantana mountains was 2650 mm). Most of the female E. helena were longer than the males.

### Season

In an island-wide study on snake bites it was observed that there was no distinct seasonal pattern in bites (de Silva 1976). In the present study it was seen that snakes did not have any distinctly seasonal habits; and rain fall did not seem to affect their habits.

No marked male/female pattern was observed during various months except that of the 15 female E. helena 8 were captured during November.

### Locality

Most of the snakes were caught in and around the animal house in which rats and mice are kept for experimental purposes. Of the 39 najas, 17 E. helena and 7 P. mucosus,



### Time

From collection data it seems that the peak of activity was from 8 am to 9 am. The earlier observations on naja were confirmed, as most of the larger specimens were caught between 12 noon and 3 pm. E. helena seemed to be most active during the morning hours. This has often been observed in captivity as well.

### Distribution of snakes in the university park

Species	Male	Fem- ale	Total	Percent- age
Typhlops braminus	1	1	2	1.7
Ptyas mucosus maximus Sp. nov.	3	4	7	5.9
Elaphe helena	2	15	17	14.3
Oligodon sublineatus	2	1	3	2.5
Lycodon striatus sinhaleyus sp. nov.	8	7	15	12.6
Lycodon aulicus	0	3	3	2.5
Dendrelaphis bifrenalis	1	1	2	1.7
Boiga trigonata	1	1	2	1.7
Boiga ceylonensis ceylonensis	1	1	2	1.7
Ahaetulla nasuta nasuta	1	5	6	5.0
Natrix stolata stolata	3	7	10	8.4
Atractium schistosum	1	0	1	0.8
Bungarus ceylonicus ceylonicus	2	2	4	3.4
Naja naja naja	25	14	39	32.8
Vipera russelli pulchella	3	2	5	4.2
Trimeresurus trigonocephalus	0	1	1	0.4
Total	54	65	119	

Anslem de Silva  
Faculty of Medicine  
Peradeniya Campus  
Peradeniya  
Sri Lanka



## OUR HERPETOLOGICAL MUSEUM

The Madras Snake Park Trust has commenced a new project to set up a Herpetological Museum. Our aim is to collect all the 236 species of Indian snakes and their sub-species. Though the task is stupendous, our initial success in the first collection trips undertaken gives a lot of encouragement to go ahead. The work has been undertaken by Prof. M.V. Rajendran M.A., Ph.D., the present Director of the Park with the assistance of one or two helpers of the park. A brief report of the four trips is given below.

### Trip I

Dates of collection : 28th and 29th July 1979.

Places Visited : Rubber plantations near Vannanparai, Ambalase estate north west hilly area of western ghats of Kanyakumari District about 2000 high.

Snakes collected : a) Uropeltid snakes belonging to three genera.

- i) Uropeltis rubrolineatus - 2 specimens
- ii) Uropeltis/hipsoni - 1 specimen
- iii) Rhinophis travancoricus - 5 specimens

The collections were made digging a bund of humus mixed moist soil containing earthworms near the border of a river. Uropeltis hipsoni is more hardy and it stuck on to the interspaces of the lines of rubber trees in a comparatively poor gravelly soil, though mixed with humus. b) Colubrine snake belonging to the genus Xylophis. Three adults resembling young Rhinophis and two young ones were collected from the surface covered by dry leaves and humus, from the same area where Uropeltids were gathered. In colour and superficial resemblance in shape they mimic Rhinophis. It belongs to the species perrotets. c) Small typhlopids were also collected underneath dry logs of woods where larval earwigs and termites were common.

### Trip II

Undertaken on 31st August lasted till 4th September 1979

Places Visited : Periyakulam, Madurai district and Alagarkoil hills, 14 miles north of Madurai.

Among our collection of snakes and lizards the following are worth mentioning:

i) Red bellied green whip snake (Dryophis nasutus rhodogaster) from Kallipatti (Periyakulam), pretty large green snake with the entire ventrals rose-red in colour (a rare sub-species). When brought to our terrarium in the snake park fourteen young ones were born; all with light green belly.

ii) One Boiga with the usual ( ) gamma mark on the head but the forwardly directed median line ending in a cross.



iii) A pair of Brown Whip Snakes (Dryophis pulverulentus) This brown vine snake is a rare type found in Western ghats. Alagar hills are situated far interior and one never expected them there. This is a new record in the fauna of Alagar hills.

The Lacertid lizard Cabrita leishnaulti (five from Kallipatti in front of the women's college, and six from Alagar hills on the dry road side were collected. Green (Calotes calotes) one pair from Alagar hills and several Mabuya bibroni and Sagitana ponticeriana from Periyakulam were other reptiles collected.

### Trip III

Dates 24th to 29th October '79.

Localities visited: Periyakulam (Kumpakarai Thamaraiikulam and Kallipatti and Alagar hills again)

Peculiar snake collected in this trip is the Giant Blind snake (Typhlops acutus) 19.5 inches long and 0.4 inch thick, uniformly cylindrical with a short tail and beaked snout. This was collected in the stony pathway to the spring up in the Algarkoil hill (2000 feet) Smith in Fauna of British India says, "Rare of latitude 16°, the largest of all the oriental species". It is the first record from Madurai District. One more Brown Whip snake was also collected in the higher elevation.

### Trip IV

Dates: 30th October to 2nd November 1979.

Places visited - Kavaloor in the Javvathu hills of North Arcot District, 3000 ft high.

Peculiar collection : Uropeltis ellioti a new subspecies not recorded so far.

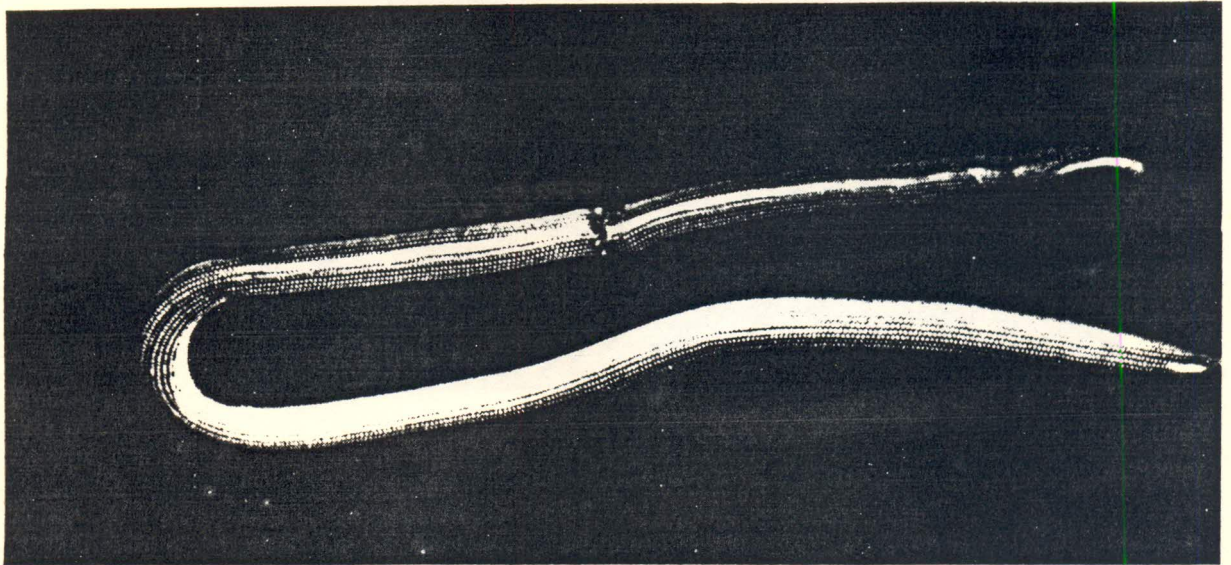
\* \* \*



*FURTHER SUBSCRIPTIONS FOR 1980 HAVE BEEN RECEIVED FROM:*

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*The Giant blind Snake (Typhlops acutus)*



## SUBSCRIPTION

Local :	Rs.	10	annually
Foreign :	\$	2	annually (surface)
	\$	4	annually (air-mail)

Cheques should be made to the Madras Snake Park Trust

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*Brown whip snake (Dryophis pulverulentus)*  
*Alagar Hill, Madurai Dist. S. India.*